

WHAT IS CLAIMED IS:

1. An image pickup apparatus comprising:

a plurality of pixel areas arranged on a single semiconductor chip to be adjacent to each other through a predetermined space, each of said pixel areas having pixels arranged two-dimensionally, each pixel having a photoelectric conversion unit; and

a plurality of microlenses for forming light into images,

wherein said plurality of microlenses are formed on said plurality of pixels areas and on the predetermined spaces between said plurality of pixel areas.

2. An apparatus according to claim 1, further comprising a scanning circuit adapted to select a pixel included in the pixel area, said scanning circuit being formed on the semiconductor chip on a side on which the pixel area is not adjacent to the other pixel areas.

3. An apparatus according to claim 1, wherein said plurality of pixel areas comprise at least first, second, and third pixel areas, said first pixel area receiving a first color component from an object, said second pixel area receiving a second color component from the object, and said third pixel area receiving a third color component from the object.

4. An apparatus according to claim 3, wherein the first color component is a red component, the second color component is a green component, and the third color component is a blue component.

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5. An apparatus according to claim 1, further comprising a plurality of lenses for forming light into images, said lenses being provided corresponding to said respective pixel areas.

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6. An apparatus according to claim 1, further comprising:

a signal processing unit adapted to form an image by synthesizing signals respectively output from said plurality of pixel areas;

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a timing generator adapted to drive said plurality of pixel areas and said signal processing unit; and

a control and operation unit adapted to control said signal processing unit and said timing generator.

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7. An image pickup apparatus comprising:

a photoelectric conversion area for converting light into charge;

a passivation layer for protecting said photoelectric conversion area; and

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a microlens formed in contact with said passivation layer, for focusing incident light onto

said photoelectric conversion area,

wherein a surface of said passivation layer is planarized, and said microlens is formed on the planarized surface.

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8. An apparatus according to claim 7, wherein said passivation layer is made of an inorganic material.

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9. An apparatus according to claim 7, wherein said passivation layer is planarized by chemical mechanical polish.

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10. An apparatus according to claim 7, wherein said passivation layer is made of a material that allows chemical mechanical polish.

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11. An apparatus according to claim 7, wherein said passivation layer is made of an SiON-based material or SiO-based material.

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12. An apparatus according to claim 7, wherein said image pickup element including said photoelectric conversion area is a MOS image pickup element.

13. An apparatus according to claim 7, further comprising a color filter located closer to a light

incident side than said microlens.

14. An apparatus according to claim 7, further comprising:

- 5        an optical system adapted to form light into an image onto said photoelectric conversion area; and
- a signal processing circuit adapted to process an output signal from said photoelectric conversion area.

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